Know the Earth…Show the Way

GWG Focus Groups

Eight GWG Focus Groups

- Imagery
  - NITFS Technical Board (NTB)
  - Motion Imagery Standards Board (MISB)
  - Community Sensor Model Working Group (CSMWG)
- GEOINT Reporting (RFG)

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Eight GWG Focus Groups (con't)

- Geographic Portrayal (PFG)
- Application Schemas for Feature Encoding
- Metadata (MFG)
- Information Transfer and Service Architecture (ITSA FG)

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GWG Focus Group Functions

- Serve as a **community forum** for issues relating to GEOINT standards focus area
- **Advise** GWG on standardization **issues**
  - Discuss issues from Inaugural GWG
- **Advise** GWG on candidate DISR **standards** for GEOINT standards focus area

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How to Join the GWG Focus Groups

- Send e-mail to the Focus Group Chair with cc to GWG Secretariat at:

  ncgis-mail@nga.mil

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Know the Earth…Show the Way

Focus Group Overview

8 GWG Focus Groups

NITFS Technical Board (NTB)

Self-register for the NTB email reflector list
http://ismc.nga.mil/ntb/

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NITFS Technical Board (NTB)

- The technical focal point for still imagery, and imagery-related standardization activities within the GEOINT community.
  - Initially established in the early 1990's by the Imagery Standards Management Committee (ISMC).
  - Now serving as a technical board within the GWG's Focus Group construct.

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NTB Description

- The mission of the NTB is to facilitate the:
  - Development,
  - Selection,
  - Adoption,
  - Profiling,
  - Application,
  - Implementation, and
  - Testing

  of standards essential to establishing interoperability and quality for still imagery, associated metadata, and other related aspects within the NSG

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NTB Standardization Topics

- Still imagery and gridded data
- Imagery and gridded data formats
- Imagery and gridded data compression
- Graphical, textual, and other means to annotate imagery and imagery products
- Imagery-related support data and metadata
- Imagery-derived data and metadata, to include foundation data
- Image Quality
- Other topics as designated by the GWG

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NTB - Examples of Standards

- Mil-Std-2500C NITF Version 2.1
- Mil-Std-2301A Computer Graphics Metafile
- Mil-Std-188-198 JPEG Image Compression
- Mil-Std-188-198A JPEG Image Compression
- Mil-Std-188-199 Vector Quantization Decompression
- STDI-0001 National Support Data Extensions (SDEs)
- STDI-0002 Compendium of TREs
- STDI-0004 FDDRD
- STDI-0005 Implementation Practices of the NITFS (IPON)
- STDI-0006 NITF 2.1 Commercial Dataset Requirements Document (NCDRD)
- N0105/98 NITFS Test Program Plan
- N0106/98 BWC Standards & Guidelines
- NSG-STD-001-05 NGA NITF 2.0 Dataset Definition Document (NNDDD)
- NSG-STD-002-05 NGA Commercial Data Definition Document (NCDDD)

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NTB - Examples of Standards (cont.)

- STANAG 4545 NATO Secondary Imagery Format (NSIF)
- STANAG 4559 NATO Secondary Imagery Library Interface (NSILI)
- STANAG 4607 Ground Moving Target Interface (GMTI)
- STANAG 7023 Primary Image Format
- STANAG 7194 Image Quality Rating Scale
- STANAG 7074 Digital Geographic Information Exchange Standard (DIGEST)
- DGIWG Profile ISO/TC 211-based Standards Profile
- ISO/IEC 12087-5 Basic Image Interchange Format (BIIF)
- ISO/IEC 10918-1 JPEG (DCT lossy & DPCM lossless)
- ISO/IEC 15444-1 JPEG 2000 Part 1
- NSIF01.00 NSIF Profile of BIIF
- BPJ2K01.00 BIIF Profile for JPEG 2000
- BPCGM01.00 BIIF Profile for CGM

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NTB Program of Work

- Format Working Group (FWG)
  - Replacement Sensor Model (RSM)
  - The TRE Dilemma
  - Naming conventions
  - Beyond NITF – What Next
- Bandwidth Compression WG (BWCWG)
  - JPEG 2000
  - Interactive navigation of imagery & metadata over networks
- Metadata Profile WG (MPWG)
  - Universal Phase History Data (UPHD)
  - Tools
  - Metadata for common products

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Motion Imagery Standards Board (MISB)

MISB Website: http://ismc/nga.mil/misb

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MISB

- Motion imagery standards were developed from 1996 - 2000 by the DoD/IC Video Working Group (VWG)
- The MISB is the successor organization chartered to manage the motion imagery standards process for the DoD and Intelligence Community (IC)
- Peer to the NTB for still imagery

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MISB Description

- The MISB provides a technical forum for establishing motion imagery interoperability standards across the DoD and IC under the auspices of the NCGIS. The MISB also provides technical input to the ICSIS, IC/NSG and DoD Joint Technical Architecture (JTA) (now the DISR), and leadership in motion imagery standards for NATO Air Group IV.

- The MISB provides not just “standards” for motion imagery, but advanced testing and implementation assistance, via standard practices and engineering documents

Managing the “glass to glass – sensor to shooter” aspects of motion imagery.

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MISB Description (cont)

- MISB Interoperability Lab
  - Advanced Motion Imagery Testing Facility
    - Open to government and vendor community
    - Capability for advanced quantitative and limited qualitative testing
  - Advanced Authoring Format (AAF) Testbed
  - Surrogate Community Motion Imagery Library (CMIL)
    - Holding “Gold” standard clips of motion imagery
    - Accessible via Internet VPN access
- MISB provides guidance and oversight to the Joint Interoperability Test Center (JITC) for community testing and accreditation of motion imagery standards and systems

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MISB Participation & Meetings

- 300+ members
- Typically ~ 50 meeting participants (main session & working groups)
- Six Working Groups
  - Advanced Motion Imagery Working Group
  - Advanced Compression Working Group
  - Interoperability Working Group
  - Metadata Working Group
  - Infrared Working Group
  - Tradecraft and Tools Working Group
- Meet 2 – 4 times per year
  - Ad Hoc Working Groups meet as required

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MISB Participation & Meetings (cont)

- Services and IC represented
- Consensus governed
- Voting structure has been used
- Motion Imagery Standards Profile (MISP)
  - Standard is stable and changes little version to version
    - Currently at version 3.1
  - Example MISP 2.2 from 2.1
    - Standardized ITU-T H.264 for low bit rate applications
    - Recommended AAF and MXF

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MISB Deliverables & Products

- The main “deliverable” of the MISB is the Motion Imagery Standards Profile (MISP), which is typically updated every quarter, during the MISB Main Session
- Recommended Practice (RP’s) documents are produced on an as needed basis, and as suggested by the community
- Engineering Documents (ED’s) are produced on an as needed basis, and as suggested by the community.
- Other technical and working papers are produced as needed and suggested by the community
- All unclassified documents are maintained and available via the **MISB Web Site: http://ismc.nga.mil/misb**

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MISB - Types of Standards

- **Video Compression Encoding/Decoding**
  - MPEG-2
  - H.264
  - Other, i.e., JPEG2000
- **File Format**
  - MPEG-2 Transport Stream
  - AAF/MXF Advanced File Format Prototyping
- **Metadata**
  - KLV Metadata Tagging/Registration
  - MISB acts as community conduit for KLV element data dictionary registration to the Society for Motion Picture and Television Engineering (SMPTE)
- **Infrared Standards**
  - Cutting edge, leading government and industry
  - Significant changes already being made to SMPTE standards

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MISB - Types of Issues

- Metadata R&D
  - New KLV elements
  - Time-Synchronized Metadata
- Advanced Compression
  - H.264
  - Advanced Prototyping
    - Airborne H.264 encoder

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MISB - Types of Issues (cont)

- Multi-Media File Format R&D
  - Advanced Authoring Format (AAF)
  - Material Exchange Format (MXF)
- Community Motion Imagery Libraries
- Motion Imagery Quality Metrics
- Standard Practices and Engineering Guidance
- Testing and Certification

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Community Sensor Model Working Group (CSMWG)

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CSMWG

- Working Group currently exists as an NGA and Services collaborative forum
  - Currently maintains Technical Requirements Document and API under configuration control
- Outgrowth of Air Force and NGA requirement to develop “plug-and-play” sensor models
  - Identified need for a community standard

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CSMWG Purpose

- Collaborative environment to support a community approach for the development, verification, validation, maintenance and configuration management of the sensor models standard

Sensor models are a critical prerequisite for the entire range of current and future geopositioning products, services and applications required by the DoD and IC.

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CSMWG Mission

- Ensure all sensor models identified and designated to support DoD and IC geopositioning services, production, and applications are based upon and compliant with open, consensus-based, community standards/specifications
  - Specifications maintained within Technical Requirements Document and posted in the DISR

Current focus is on airborne sensors / platforms

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CSMWG Governance

- Roles and responsibilities of members set forth within a Memorandum of Agreement between NGA and member organizations
- Governance and relationship to and with GWG and NCGIS to be defined within a charter approved by the GWG Chair and Director, NCGIS

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CSMWG Membership

- Current
  - Agencies: NGA
  - Services: AF and USN
- Future
  - Other DoD Components
  - Non-DoD IC
  - NATO and Allies
  - Industry

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GEOINT Reporting Focus Group (RFG)

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RFG Function

- Serve as the GEOINT community of interest for:
  - The USMTF CCB
  - Other messaging bodies as appropriate

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RFG - Potential Standards

- MIL-STD-6040, U.S. Message Text Formatting Program (USMTF):
  - Imagery Interpretation Report (IIR) (C100)
  - Graphical Report - Overlay Message (GRAPHREP) (C203)
  - Reconnaissance Exploitation Report (RECCEXREP) (C101)
  - Sensor Tactical Contact Report (SENSOREP) (C133) (TBD)
  - Tactical Measurement And Signature Intelligence Report (TACMASINTREP) (C140) (TBD)
  - XML-MTF (TBD)
- Potential other standards:
  - MIL-STD-6016C, Tactical Data Link Variable Message Format (VMF)
  - NGA and CMO developed standards for web presentation

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RFG Issues

- Types of issues this Focus Group might address
  - Harmonization of EARS with USMTF and other community standards
  - Migration of text-based reporting to XML
  - Standards for web presentation of GEOINT

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Application Schemas for Feature Encoding Focus Group (ASFE)

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ASFE

- Application Schemas for Feature Encoding defined as:
  - conceptual schema for data required by one or more applications

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AFSE - Types of Standards

- Examples of standards that would fall under ASFE:
  - ISO 19109 Geographic Information – Rules for application schemas
  - ISO 19131 Geographic Information – Data Product Specification
  - Standards for Feature Catalogues

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ASFE Issues

- Types of issues the ASFE might address
  - Need for electronic catalogues standards (35-05, GWG Issue list)
  - GEOINT support to logistics and network analysis (and logistical efforts, i.e., **features**) (52-05, GWG Issue list)

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Portrayal Focus Group (PFG)

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PFG Activities

- Develop NSG roadmap for GEOINT portrayal
  - Harmonize with DGIWG roadmap, already under development
- "To Be" GEOINT portrayal architecture
  - Symbol registry schema and information model
  - Registry IT
  - Populate Registry
  - Registry process

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PFG - Types of Standards

- ISO 19117 – Portrayal of Geographic Information
- ISO 19135 – Procedures for Registration of Items of Geographic Information
- OGC Styled Layer Descriptor (SLD)
- OGC Style Management Services (SMS)
- NATO/DOD/IC standard implementation of these standards
- Symbols for portrayal of Mission Specific Data
- Symbols for Homeland Security/Emergency Response

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PFG Issues

- Types of issues this Focus Group might address:
  - Symbology – hardcopy and softcopy (issue 20-05 from January 05 GWG)
  - GEOINT Portrayal Roadmap
  - Web-enabled vs. stand-alone architecture
  - Liaison with SSMC

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Metadata Focus Group (MFG)

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Metadata Harmonization Activities

- Digital Geospatial Information Working Group (DGIWG)
- Distributed Common Ground Station (DCGS)
- Multinational Geospatial Co-Production Group (MGCP)
- Intelligence Community Metadata Working Group (ICMDWG)
- Federal Geographic Data Committee (FGDC)
- Open Geospatial Consortium (OGC)
- DoD Discovery Metadata Specification (DDMS)
- Advanced Geospatial Intelligence (AGI)

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Metadata Harmonization Activities (cont)

- NATO Air Group IV (AGIV)
- STANAG 7023 Primary Imagery
- STANAG 4545 Secondary Imagery
- STANAG 4607 Ground Moving Target Indicato
- STANAG 4609 Digital Motion Imagery
- STANAG 4559 NATO Standard Imagery Library Interface (NSILI)

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ISO Metadata Harmonization

- **ISO 19115:2003 Geospatial Metadata**
- **ISO 19115-2 Extensions for Imagery and Gridded Data**
- **ISO 19139 XML Schema Implementation of ISO 19115:2003**
- **ISO 19130 Sensor and Data Models for Imagery and Gridded Data**
- **ISO/IEC JTC1 SC24**
- **ISO/IEC JTC1 SC29**
- **Enterprise Engineering(EE)/NGA Enterprise Architecture (GeoScout)**
- **Possibly DISA XML Registry**
- **NAS**

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MFG - Types of Standards

- Examples of standards that would fall under this Focus Group:
  - ISO 19101-2 Geographic Information – Reference Model – Part 2: Imagery
  - ISO 19115:2003 Geographic Information – Metadata
  - ISO 19115-2 Geographic Information – Metadata – Part 2: Extensions for Imagery and Gridded Data
  - ISO 19130 Geographic Imagery - Sensor and Data Models for Imagery and Gridded Data
  - ISO 19139 Geographic Information – Metadata – XML Schema Implementation

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MFG Activities

- Develop NSG roadmap for GEOINT metadata
  - Harmonize with metadata roadmaps, already under development
  - Ensure continuity of all roadmaps and existing charters, etc.

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MFG Topics

- Types of topics this Focus Group might address
  - Development and acceptance of a common core metadata sets
  - Implementation requirements to ensure interoperability
  - Shared data for discovery and retrieval

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Information Transfer & System Architecture Focus Group (ITSA FG)

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ITSAFG Description

- ITSAFG is the GWG advisor on matters related to GEOINT “data services” that provide for Tasking, Posting, Discovery, Access, and Analysis of GEOINT data stores/information in a distributed, real-time environment
- Additional services required for positioning, cataloguing, change detection, and so on
- Special interests are emerging service architecture components and technologies

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ITSAFG - Types of Standards

- Examples of standards that would fall under this Focus Group:
  - ISO 19119 Geospatial Services
  - Open Web Services (OWS)
  - Simple Object Access protocol (SOAP)
  - GML Geography Markup Language
  - AAF Advanced Authoring Format
  - VPF Vector Product Format

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ITSAFG Issues

- Identify requirements/standards for Service:
  - Metadata
  - Registers
  - Access
- Identify shortfalls in existing standards
- GEOINT-related web services
- Consider requirements for network transfer and applicability of GML, AAF, VPF, GeoTIFF, JPEG 2000
- Technologies that enable interoperable service components

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